

**Appln No. 10/051,391**  
**Amdt date March 22, 2004**  
**Reply to Office action of December 22, 2003**

**REMARKS/ARGUMENTS**

This Amendment is submitted in response to the Office action of December 22, 2003. Claims 33 and 35 have been amended. Claims 1-42 are pending in the application. Applicant thanks the Examiner for attending to the application.

**Objections**

On page 2 of the action, claims 33 and 35 are objected to because of informalities. Specifically, the action indicates that the word "reflected" should read "reflecting" in these claims. Claims 33 and 35 have been amended as suggested by the Examiner to correct the informalities. Reconsideration and withdrawal of the objections are respectfully requested.

**Claim Rejections - 35 U.S.C. § 103**

Independent claim 1 is rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 4,768,182 issued to Hatfield in view of U.S. Patent No. 5,784,507 issued to Holm-Kennedy et al. ("Holm-Kennedy").

Hatfield, in col. 1, lines 5-8 states "[t]his invention relates to an interferometry-based decoding technique and apparatus for monitoring the optical path difference between a pair of reflecting surfaces of an etalon or Fabry-Perot interferometer." Hatfield, in col. 2, lines 18-21, also states "each data track [of the disc] carries analogue information in the form of an optical path difference between two reflecting, nominally parallel surfaces of the disc." In addition, FIG. 5 of Hatfield illustrates a data decoding apparatus with a

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rotating polygonal mirror, where "[a] rotating polygonal mirror may be used to scan a light spot across the surface of the disc...." See Hatfield, col. 2, lines 35-37. Thus, it appears that Hatfield discloses a device measuring a physical optical path difference using an optical beam. In addition, it appears that Hatfield discloses arrangements that spot light on a specific location at a time.

Holm-Kennedy, in col. 3, lines 36-42, states "[t]he incident intensity  $I_\lambda(x,y)$  from this top incident radiation is received across the upper surface of filter 2, is distributed over the  $(x,y)$  dimension of the filter. (By contrast, in an edge illuminated structure such as described with respect to several embodiments of the present invention, illumination may be edge incident from the y-axis direction and would be denoted  $I_\lambda(y,z)$ .)" FIG. 18A of Holm-Kennedy illustrates a spectrometer that spatially and simultaneously separates out incoming optical energy incident across an entire surface of an etalon according to bands or wavelengths. Thus, it appears that Holm-Kennedy discloses a spectrometer that characterizes radiation incident across an entire surface of an etalon by measuring energy at all optical wavelengths simultaneously. See also Holm-Kennedy, col. 2, lines 45-49.

Independent claim 1 recites:

a moveable path changing optical element adapted to receive light in a first optical beam on a first path and provide the light in a second optical beam on a second path, the second path being dependent on the position of the moveable path changing optical element; and a position

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dependent optical element receiving the light in the second optical beam, the position dependent optical element changing a spectral characteristic of the light depending on the position of receipt of the light in the second optical beam by the position dependent optical element.

The Office action states that in Hatfield "the etalon is not position dependent" but that "[i]t would have been obvious ... to substitute the etalon of Hatfield with the etalon of Holm-Kennedy...." See action pg. 2-3. However, Hatfield describes a device that measures the physical optical path difference between two reflecting, nominally parallel surfaces of an optical element with an optical beam, particularly to read data. Accordingly, Hatfield's device would not work for its intended purpose if it included the etalon of Holm-Kennedy, and there would be no reason discernable in Hatfield to do so.

The action further states that the combination of Hatfield and Holm-Kennedy would "facilitate the changing and selection of spectral characteristics of an incoming light beam..." See action pg. 3. However, motivation, suggestion or teaching is not provided or suggested by the references, absent improper use of hindsight reconstruction by using the claimed invention as an instruction manual or guide to manipulate the references to arrive at the claimed invention. For example, in Holm-Kennedy, light is incident across an entire surface of an etalon and energy distribution of the light is measured at all optical wavelengths simultaneously. On the other hand, Hatfield's device directs light onto a specific location on an etalon at a time, not across an entire surface of the etalon simultaneously.

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Thus, there is no teaching or suggestion as to why or how to combine Hatfield with Holm-Kennedy to result in the claimed invention, as recited in claim 1, absent improper hindsight reconstruction. Indeed, Hatfield and Holm-Kennedy appear to teach away from each other and away from the invention as claimed in claim 1.

Furthermore, individually, each of the references provides a complete solution to a specific problem. Specifically, Hatfield provides a complete solution in which a decoding device serves to read encoded data from a disc, which is in the form of an optical path difference between two reflecting, nominally parallel surfaces of the disc. Likewise, Holm-Kennedy provides a complete solution in which a spectrometer characterizes wavelength and energy distribution of incident optical radiation across an entire surface of an etalon. Neither reference provides a motivation, suggestion or teaching to improve upon the complete solutions of Hatfield or Holm-Kennedy to arrive at the claimed invention. Accordingly, claim 1 appears to be allowable over Hatfield in view of Holm-Kennedy. Claims 2-12 and 15-18, depending on claim 1, are also therefore allowable.

Independent claim 13 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 13 recites, in part:

a moveable path changing optical element adapted to receive light in a first optical beam on a first path and provide the light in a second optical beam on a second path, the second path being dependent on the position of the moveable path changing optical element; a position dependent optical element receiving the light in the second optical beam, the position dependent

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optical element changing a spectral characteristic of the light depending on the position of receipt of the light in the second optical beam by the position dependent optical element....

As discussed with respect to claim 1, Hatfield and Holm-Kennedy, alone or combined, do not disclose or teach such. In addition, neither Hatfield nor Holm-Kennedy, alone or combined, appear to describe or suggest "a fiber providing light in the first optical beam and receiving light with a spectral characteristic changed by the interferometer" as specified in claim 13. Accordingly, claim 13 appears to be allowable over Hatfield in view of Holm-Kennedy. Claim 14, depending on claim 13, is also therefore allowable.

Independent claim 19 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 19 recites:

a spatially varying optical unit, the spatially varying optical unit adapted to receive light provided on a plurality of paths, the spatially varying optical unit varying a spectral characteristic of received light depending on the path of the light; and means for providing light to the spatially varying optical unit on any one of the plurality of paths.

In Hatfield, there is no disclosure as to "varying a spectral characteristic of received light depending on the path of the light." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition. Accordingly, claim 19 appears to be

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allowable over Hatfield in view of Holm-Kennedy. Claims 20-28, depending on claim 19, are also therefore allowable.

Independent claim 29 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 29 recites:

means for reflecting light on a first path to any one of a plurality of second paths; and means for receiving light on at least two of the second paths and changing a spectral characteristic of the light depending on the path of the light and position of the light incident on the means for changing a spectral characteristic.

In Hatfield, there is no disclosure as to "changing a spectral characteristic of the light depending on the path of the light and position of the light incident on the means for changing a spectral characteristic." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition. Accordingly, claim 29 appears to be allowable over Hatfield in view of Holm-Kennedy. Claim 31, depending on claim 29, is also therefore allowable.

Independent claim 30 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 30 recites:

receiving light on a first path; transferring the light on the first path to a selected path of any one of a plurality of second paths; receiving the transferred light; and changing a spectral characteristic of the light depending on the selected path and location of the received transferred light.

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In Hatfield, there is no disclosure as to "changing a spectral characteristic of the light depending on the selected path and location of the received transferred light." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition. Accordingly, claim 30 appears to be allowable over Hatfield in view of Holm-Kennedy. Claim 32, depending on claim 30, is also therefore allowable.

Independent claim 33 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 33, as amended, recites:

an optical circulator; a movable mirror; a first fiber providing light to the optical circulator; a position dependent optical element; a second fiber receiving light directed from the optical circulator and providing the light to the movable mirror, the movable mirror reflecting the light from the second fiber to the position dependent optical element changing the spectral characteristic of the light from the movable mirror based on a path of the light from the movable mirror and position of the light incident on the position dependent optical element; and wherein the position dependent optical element reflects back the light with the changed spectral characteristic to the movable mirror that reflects the light with the changed spectral characteristic back into the second fiber with the movable mirror remaining stationary after reflecting light to the position dependent optical element.

In Hatfield, there is no disclosure as to "changing the spectral characteristic of the light from the movable mirror

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based on a path of the light from the movable mirror and position of the light incident on the position dependent optical element." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition.

Moreover, the Office action states that "an optical circulator of claim 33 and beamsplitter 16 of Hatfield are functional equivalents...." See action, pg. 8. The Applicant respectfully requests that if the rejection of claim 33 (or other similarly situated claims) is maintained, that the next Office action provide support as to how they are equivalent, particularly with respect to the device claimed in claim 33, and if equivalent, how one of skill in the art would have known of their interchangeability. Accordingly, claim 33 appears to be allowable over Hatfield in view of Holm-Kennedy. claim 34, depending on claim 33, is also therefore allowable.

Independent claim 35 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 35, as amended, recites:

an optical circulator; a movable mirror; a spatially varying optical element; a first fiber providing light to the optical circulator; a second fiber receiving light directed from the optical circulator and providing the light to the movable mirror, the movable mirror reflecting the light from the second fiber to the spatially varying optical element changing the spectral characteristic of the light from the movable mirror based on a path of the light from the movable mirror and position of the light incident on the spatially varying optical element; wherein

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the spatially varying optical element reflects back the light with the changed spectral characteristic to the movable mirror that reflects the light with the changed spectral characteristic back into the second fiber; and wherein the spatially varying optical element has different reflectivities varying spatially across the optical element for different polarizations of light.

In Hatfield, there is no disclosure as to "changing the spectral characteristic of the light from the movable mirror based on a path of the light from the movable mirror and position of the light incident on the spatially varying optical element...." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition. Accordingly, claim 35 appears to be allowable over Hatfield in view of Holm-Kennedy. Claims 36-38, depending on claim 35, are also therefore allowable.

Independent claim 39 is rejected under 35 U.S.C. 103(a) as obvious over Hatfield in view of Holm-Kennedy. Independent claim 39 recites:

a movable mirror; a planar waveguide having a plurality of waveguides arranged in an array; an optical fiber providing light to the movable mirror that reflects the light to at least one of the plurality of waveguides; wherein the at least one of the plurality of waveguides changes the spectral characteristic of the light from the movable mirror based on a path of the light from the movable mirror and position of the light incident on the at least one of plurality of waveguides; and wherein each of the plurality of waveguides has an etched broadband gratings with

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spacing between the gratings varying for each of the plurality of waveguides in that each of the plurality of waveguides transmits light at a wavelength different from that of other plurality of waveguides.

In Hatfield, there is no disclosure that "changes the spectral characteristic of the light from the movable mirror based on a path of the light from the movable mirror and position of the light incident on the at least one of plurality of waveguides...." In addition, as discussed with respect to claim 1, there is no reason or suggestion to combine the etalon of Holm-Kennedy with the disclosure of Hatfield absent improper hindsight recognition. Accordingly, claim 39 appears to be allowable over Hatfield in view of Holm-Kennedy. Claims 40-42, depending on claim 39, are also therefore allowable.

In view of the foregoing remarks, it is respectfully submitted that this application is now in condition for allowance. Accordingly, reconsideration of the application and allowance of claims 1-42 are respectfully requested.

Applicant also notes that prior to the mailing of the Office action on December 22, 2003, Applicant filed a Information Disclosure Statement (IDS) along with PTO Form SB/08A/B and the associated cited references on December 5, 2003. Enclosed is a copy of the acknowledged receipt postcard indicating that the IDS, the PTO Form and the associated references were received by the Patent Office on December 8, 2003. Also enclosed are copies of the IDS dated December 5, 2003, and associated PTO Form.

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Applicant respectfully requests that the Examiner confirm consideration of the IDS of December 5, 2003 with the associated PTO Form and references, and return an initialed copy of the PTO Form to Applicant's representative.

Respectfully submitted,  
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DMC/kmg

Enclosures: Copy of Acknowledged Receipt Postcard  
Copy of Supplemental Information Disclosure  
Statement dated December 5, 2003 and associated  
PTO/SB/08A/B Form

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